

PATENT ABSTRACTS OF JAPAN

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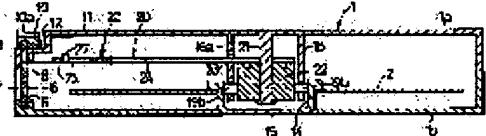
(21)Application number : 08-249282 (71)Applicant : HITACHI MAXELL LTD
 (22)Date of filing : 30.08.1996 (72)Inventor : MIZUTANI HIKARI
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(54) DISK CARTRIDGE

(57)Abstract:

PROBLEM TO BE SOLVED: To prevent dust from falling when a hub at a central part of a disk is rubbed through touch with an inner face of a main body case, by controlling the disk not to rattle in the main body case when the disk is not used.

SOLUTION: A disk 2 in a main body case 1 has a hub 15 at a central part thereof. A recessed part 14 is fitted to the hub 15. A cylindrical part 16 is projected downward from a central part of an inner face of an upper wall 11 of the main body case 1. The hub 15 outfits the recessed part 14 in a rotatable manner to a lower end part of the cylindrical part 16. An arm 19a which is elastically deformable in a diametrical direction of the cylindrical part 16 is set at the cylindrical part 16, and a rotary member 22 is set in the cylindrical part 16 to be rotatable about a central shaft 21. When a lid 5 opening/closing an opening part 4 of the main body case 1 through which a head is inserted is closed, the rotary member 22 is rotated via a link mechanism 23 in association with the closure operation, and butts against a press projection 19b at a leading end of the elastic arm 19a. Because of the butting, the press projection 19b is projected out in the diametrical direction of the cylindrical part 16 thereby to be pressed and engaged with an inner face of the recessed part 14 of the hub 15, so that the disk 2 is controlled not to rattle.



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CLAIMS**[Claim(s)]**

[Claim 1] In a disk cartridge equipped with the lid 5 which forms the opening 4 for head insertion in the unilateral side 3 of the main part case 1 where the disk 2 of a record medium was held free [rotation], and opens and closes this opening 4. The disk 2 has combined with the core of this in one the hub 15 which has a crevice 14. A body 16 is protruded downward from the inside core of the upper wall 11 of the main part case 1. The hub 15 is being attached outside free [rotation of a crevice 14]. the soffit section of this body 16 -- the above -- The stopper 19 of periphery wall 16a of the aforementioned body 16 in which elastic deformation is free is formed in the direction of a path of this body 16 at least in part. between the aforementioned lid 5 and a body 16 closing operation of a lid 5 is interlocked with and elastic deformation of the aforementioned stopper 19 is carried out to the method of the outside of the direction of a path -- making -- the above -- the disk cartridge characterized by equipping the inside of the crevice 14 of a hub 15 with the stopper manipulator style 20 which carries out press engagement

[Claim 2] Elastic arm 19a is prepared in the shape of a cantilever in the notch 17 which the stopper 19 prepared in periphery wall 16a of a body 16. the nose of cam of this elastic arm 19a -- press salient 19b -- having -- **** -- the stopper manipulator style 20 -- the inside of a body 16 -- the rotation which can rotate freely to the circumference of this medial axis 21 -- with a member 22. It consists of a link mechanism 23 which makes a right opposite direction rotate a member 22. the switching action of a lid 5 -- interlocking -- rotation -- rotation -- the disk cartridge according to claim 1 which follows on a member 22 being interlocked with closing operation of a lid 5, and rotating, and contacts the aforementioned press salient 19b, and press salient 19b projects to the method of the outside of the direction of a path of a body 16 by this contact operation, and has been made to carry out press engagement at the inside of the crevice 14 of a hub 15

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the disk cartridge by which the disk which are record media, such as a floppy disk and a magneto-optic disk, is held in the hard main part case.

[0002]

[Description of the Prior Art] Although it has a hub for [in a disk / disk cartridge / this kind of] a rotation drive to this core, hold arrangement is carried out so that this disk can move idly in the direction of a radial somewhat within a main part case.

[0003]

[Problem(s) to be Solved by the Invention] In this disk cartridge, by getting the vibration at the time of transportation, a fall shock, etc., a disk tended to shake within the main part case, and for this reason, the hub rubbed against the inside of a main part case, generated powder omission, and had become the cause which causes the error of a dropout etc.

[0004] Then, the purpose of this invention was made in order to solve such a problem, and it is to offer the disk cartridge which can prevent that a disk shakes within a main part case by vibration etc. at the time of un-using it.

[0005]

[Means for Solving the Problem] The disk cartridge of this invention forms the opening 4 for head insertion in the unilateral side 3 of the main part case 1 where the disk 2 of a record medium was held free [rotation], and is equipped with the lid 5 which opens and closes this opening 4. In this disk cartridge in this invention The disk 2 has combined with the core of this in one the hub 15 which has a crevice 14, the inside core of the upper wall 11 of the main part case 1 to the body 16 -- facing down -- protruding -- the soffit section of this body 16 -- the above -- the hub 15 is being attached outside free [rotation of a crevice 14] -- Between having formed the stopper 19 of periphery wall 16a of the aforementioned body 16 in which elastic deformation is free in the direction of a path of this body 16 at least in part, the aforementioned lid 5, and a body 16 closing operation of a lid 5 is interlocked with and elastic deformation of the aforementioned stopper 19 is carried out to the method of the outside of the direction of a path -- making -- the above -- it is characterized by equipping the inside of the crevice 14 of a hub 15 with the stopper manipulator style 20 which carries out press engagement

[0006] The above-mentioned stopper 19 prepares elastic arm 19a in the shape of a cantilever in the notch 17 prepared in periphery wall 16a of a body 16, and has press salient 19b at the nose of cam of this elastic arm 19a. the stopper manipulator style 20 -- the inside of a body 16 -- the rotation which can rotate freely to the circumference of this medial axis 21 -- with a member 22 It consists of a link mechanism 23 which makes a right opposite direction rotate a member 22. the switching action of a lid 5 -- interlocking -- rotation -- rotation -- it follows on a member 22 being interlocked with closing operation of a lid 5, and rotating, the aforementioned press salient 19b is contacted, press salient 19b projects to the method of the outside of the direction of a path of a body 16 by this contact operation, and it has been made to carry out press engagement at the inside of the crevice 14 of a hub 15

[0007]

[Function] Since this is interlocked with, the stopper manipulator style 20 carries out elastic deformation of the stopper 19 to the method of the outside of the direction of a path and the inside of the crevice 14 of a hub 15 is made to carry out press engagement when a lid 5 is closed, a disk 2 can prevent shaking within the main part case 1.

[0008]

[Embodiments of the Invention] In drawing 1 and drawing 2 , a disk cartridge is held free [rotation of the disks 2 such as a magneto-optic disk by which signals, such as an image, voice, and information, are recorded on the interior of the main part case 1 of a thin shape square configuration,]. The main part case 1 forms the opening 4 for head insertion in the unilateral side 3 (record and insertion side edge to a /regenerative apparatus) which compares upper case 1a made

from plastics, and lower case 1b, comes to join together in one, and is equivalent to the anterior of upper case 1a and lower case 1b. This opening 4 is formed covering the abbreviation overall length of the longitudinal direction of the anterior side 3 so that it may be easy to insert the head by the side of record and/or a regenerative apparatus, and dust invasion prevention at the time of un-using it is aimed at by plugging up this opening 4 with the lid 5 which carries out slide opening and closing right and left.

[0009] As shown in drawing 3 and drawing 4, the slot 6 in which the vertical edge of a lid 5 is inserted free [a slide] is established in the upper and lower sides of opening 4. The unilateral side 3 of vertical case 1a and 1b is adjoined, and also a slot 7 is formed in the upper and lower sides of the side 9 so that the aforementioned slot 6 may be followed. The slot 6-7 in the crossing corner forms the unilateral side 3 and the other sides 9 in the R of the largest possible radius of curvature. On the other hand, a lid 5 bends, and it constitutes from sheet metals, such as synthetic-resin boards, such as the material which can deform freely, for example, thin polypropylene etc., or stainless steel, and it applies to the other sides 9 from the unilateral side 3 at the time of opening and closing, and along a slot 6-7, it is wraparound-easy and carries out. Furthermore, it is forming in an R configuration, and point 5a of the side which turns to the other sides 9 of a lid 5 can also slide smoothly the corner of a street of a slot 6-7, and it is [a corner of a street] wraparound-easy on the other sides 9, and it makes it them.

[0010] As shown in drawing 3, a lid 5 combines the opening-and-closing knob 10 with the upper part by the side of the end face of this in one. This opening-and-closing knob 10 is arranged on the step 12 prepared in the anterior edge of the superficies of the upper wall 11 of upper case 1a in the shape of depression. A lid 5 opens and closes by inserting in the bond part of the opening-and-closing knob 10 and a lid 5 in the slit 13 prepared in the longitudinal direction so that it may correspond to a step 12 above the aforementioned slot 6, and moving the opening-and-closing knob 10 to a longitudinal direction along with a slit 13. The opening-and-closing knob 10 has irregularity-like engagement section 10a, when record and/or a regenerative apparatus are loaded with this disk cartridge, the lid-open close operating member by the side of this equipment engages with engagement section 10a of the opening-and-closing knob 10, and switching operation of the lid 5 is automatically carried out in this engagement operation. A solid line shows the closing state of a lid 5 to drawing 2, and it shows an aperture state with a two-dot chain line.

[0011] This disk cartridge is equipped with a lock means so that a disk 2 moves idly and may not shake in the direction of a radial at the time of un-using it. the hub 15 of a cross-section acetabuliform where a disk 2 has a crevice 14 in the core of this about this lock means -- one ---like -- joining together -- the inside core of the upper wall 11 of upper case 1a to the body 16 -- facing down -- protruding -- the soffit section of this body 16 -- the above -- it is made to face in the crevice 14 of a hub 15 The notch 17 of a couple is symmetrically formed in periphery wall 16a of a body 16, and a stopper 19 is formed in the direction of a path of this body 16 free [elastic deformation] in each notch 17. A stopper 19 consists of elastic arm 19a prepared in the shape of a cantilever in the notch 17, and press salient 19b prepared at the nose of cam of this elastic arm 19a.

[0012] Between a lid 5 and a body 16, the stopper manipulator style 20 which is interlocked with closing operation of a lid 5 and operates a stopper 19 is formed. the stopper manipulator style 20 -- the inside of a body 16 -- the rotation which can rotate freely to the circumference of this medial axis 21 -- a member 22 and the switching action of a lid 5 -- interlocking -- rotation -- it has the link mechanism 23 which makes a right opposite direction rotate a member 22 a link mechanism 23 -- rotation -- an end becomes a member 22 from the relay link 25 which connects the other end of the rocking link 24 combined in one, and this rocking link 24, and a lid 5 side the bore 26 prepared in the main part case 1 more nearly up than the notch 17 of periphery wall 16a of a body 16 lets the rocking link 24 pass, and it is installed in the direction of opening 4 -- having -- a field top parallel to the flat surface of the main part case 1 -- the circumference of a medial axis 21 -- rotation -- rocking is made free the whole member 22 The relay link 25 protrudes from the bond part of the opening-and-closing knob 10 and a lid 5 horizontally to the inner direction of the main part case 1, sets up a pin 27 at this protrusion edge, and engages with the long hole 29 which formed this pin 27 in the edge of the rocking link 24.

[0013] the busy condition opened as a lid 5 showed drawing 2 with a two-dot chain line at the appropriate time -- the inside of a body 16 -- rotation -- a member 22 is in the position distant from press salient 19b of elastic arm 19a, and a disk 2 can be freely rotated to the circumference of a body 16 and -- if it closes as a lid 5 shows drawing 2 as a solid line -- closing operation of this lid 5 -- interlocking -- rotation -- on the other hand, a member 22 rotates the inside of a body 16 to ** through a link mechanism 23, and contacts press salient 19b, press salient 19b projects to the method of the outside of the direction of a path of a body 16 by this contact operation, and press engagement is carried out at the inside of the crevice 14 of a hub 15 Therefore, a disk 2 can regulate shaking in the direction of a radial, and can prevent the powder omission of the hub 15 and main part case 1 inside which are generated in connection with the shakiness depended for rubbing.

[0014] In the above-mentioned example, although opening 4 is formed in the anterior side 3 of the main part case 1, it

can also prepare in the posterior side or the unilateral side 9 on either side. Moreover, although one pair of stopper 19 is symmetrically formed in the body 16, the stopper 19 can also prepare individually. Furthermore, a link mechanism 23 is not restricted to what combined the above-mentioned rocking link 24 and the relay link 25.

[0015]

[Effect of the Invention] According to this invention, a stopper 19 shall be formed in the body 16 which fits in in the crevice 14 of the hub 15 of a disk 2, this stopper 19 shall be interlocked with closing operation of a lid 5, and press engagement shall be carried out at the inside of a hub 15. Therefore, it can prevent being able to regulate that a disk 2 shakes within the main part case 1 by vibration etc. at the time of un-using [which closes a lid 5] it, and a hub 15 rubbing against the inside of the main part case 1, and generating powder omission. Since shakiness prevention of the disk 2 by the stopper 19 can be performed by closing operation of a lid 5 being interlocked with, it is advantageous on handling.

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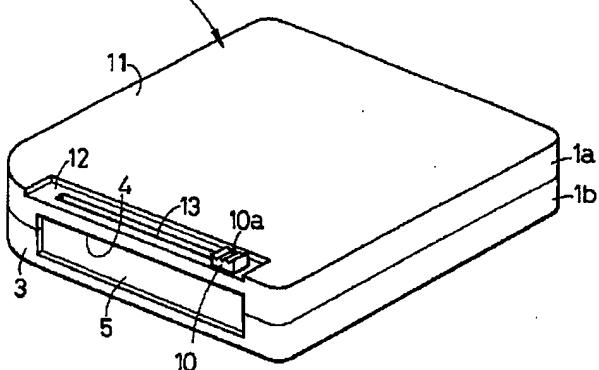
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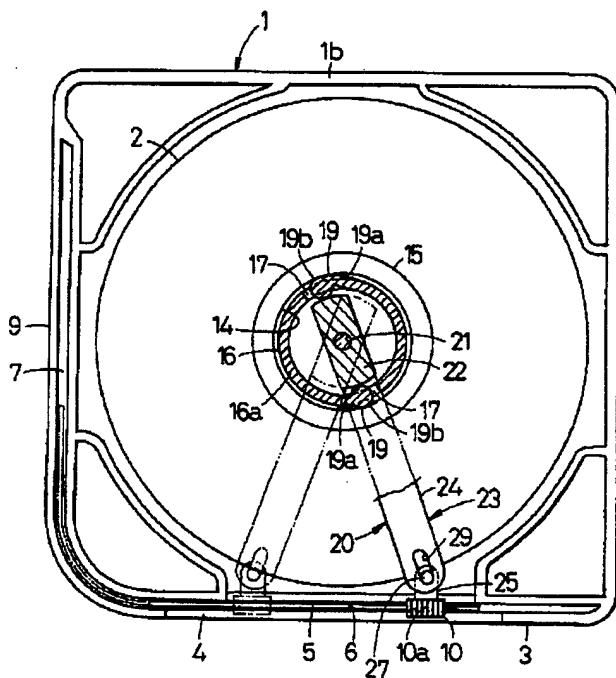
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DRAWINGS

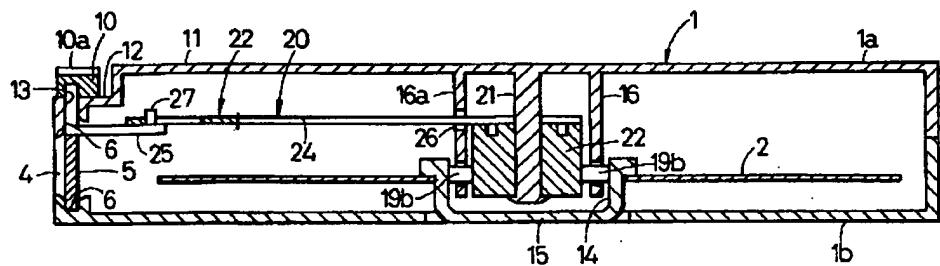
[Drawing 1]



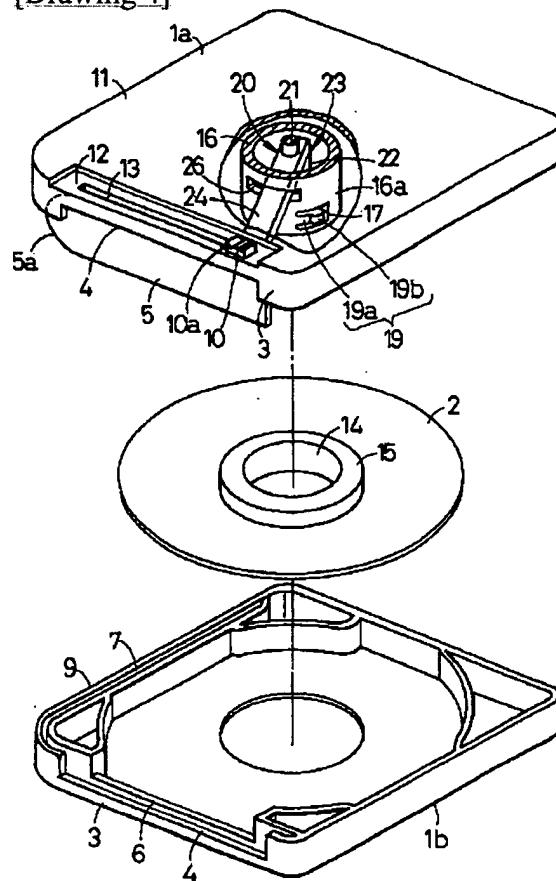
[Drawing 2]



[Drawing 3]



[Drawing 4]



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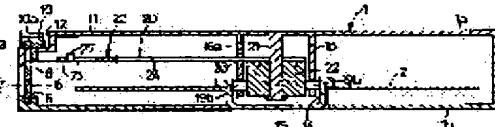
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(54) DISK CARTRIDGE

(57)Abstract:

PROBLEM TO BE SOLVED: To prevent dust from falling when a hub at a central part of a disk is rubbed through touch with an inner face of a main body case, by controlling the disk not to rattle in the main body case when the disk is not used.

SOLUTION: A disk 2 in a main body case 1 has a hub 15 at a central part thereof. A recessed part 14 is fitted to the hub 15. A cylindrical part 16 is projected downward from a central part of an inner face of an upper wall 11 of the main body case 1. The hub 15 outfits the recessed part 14 in a rotatable manner to a lower end part of the cylindrical part 16. An arm 19a which is elastically deformable in a diametrical direction of the cylindrical part 16 is set at the cylindrical part 16, and a rotary member 22 is set in the cylindrical part 16 to be rotatable about a central shaft 21. When a lid 5 opening/closing an opening part 4 of the main body case 1 through which a head is inserted is closed, the rotary member 22 is rotated via a link mechanism 23 in association with the closure operation, and butts against a press projection 19b at a leading end of the elastic arm 19a. Because of the butting, the press projection 19b is projected out in the diametrical direction of the cylindrical part 16 thereby to be pressed and engaged with an inner face of the recessed part 14 of the hub 15, so that the disk 2 is controlled not to rattle.



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【特許請求の範囲】

【請求項1】記録媒体のディスク2が回転自在に収容された本体ケース1の一側面3にヘッド挿入用の開口部4を設け、この開口部4を開閉する蓋5を備えているディスクカートリッジにおいて、

ディスク2がこれの中心部に凹部14を有するハブ15を一体的に結合しており、

本体ケース1の上壁11の内面中心部から円筒部16を下向きに突設し、この円筒部16の下端部に前記ハブ15が凹部14を回転自在に外嵌しており、

前記円筒部16の円周壁16aの少なくとも一部に、該円筒部16の径方向に弹性変形自在なストッパー19を設けており、

前記蓋5と円筒部16との間に、蓋5の閉じ動作に連動して前記ストッパー19を径方向外方へ弹性変形させて前記ハブ15の凹部14の内面に押圧係合させるストッパー操作機構20を備えていることを特徴とするディスクカートリッジ。

【請求項2】ストッパー19が円筒部16の円周壁16aに設けた切欠部17内に弹性アーム19aを片持ち状に設け、この弹性アーム19aの先端に押圧突起19bを有しており、

ストッパー操作機構20が円筒部16内をこの中心軸21まわりに回転自在な回動部材22と、蓋5の開閉動作に連動して回動部材22を正逆方向に回転させるリンク機構23とからなり、回動部材22が蓋5の閉じ動作に連動して回転するに伴い前記押圧突起19bに当接し、この当接作用により押圧突起19bが円筒部16の径方向外方へ突出してハブ15の凹部14の内面に押圧係合するようにしてある請求項1記載のディスクカートリッジ。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、フロッピーディスクや光磁気ディスク等の記録媒体であるディスクがハードな本体ケースに収容されているディスクカートリッジに関する。

【0002】

【従来の技術】この種のディスクカートリッジは、ディスクがこの中心部に回転駆動用のハブを有するが、このディスクは本体ケース内で多少、ラジアル方向に遊動できるように収容配置されている。

【0003】

【発明が解決しようとする課題】かかるディスクカートリッジでは、輸送時の振動や落下衝撃などを受けることによりディスクが本体ケース内でがたつきやすく、このためハブが本体ケースの内面にこすれて粉落ちを発生し、ドロップアウトなどのエラーをひき起こす原因になっていた。

【0004】そこで本発明の目的は、こうした問題を解

消するためになされたもので、不使用時に振動などによりディスクが本体ケース内でがたつきのを防止できるディスクカートリッジを提供するにある。

【0005】

【課題を解決するための手段】本発明のディスクカートリッジは、記録媒体のディスク2が回転自在に収容された本体ケース1の一側面3にヘッド挿入用の開口部4を設け、この開口部4を開閉する蓋5を備える。かかるディスクカートリッジにおいて、本発明では、ディスク2がこれの中心部に凹部14を有するハブ15を一体的に結合していること、本体ケース1の上壁11の内面中心部から円筒部16を下向きに突設し、この円筒部16の下端部に前記ハブ15が凹部14を回転自在に外嵌していること、前記円筒部16の円周壁16aの少なくとも一部に、該円筒部16の径方向に弹性変形自在なストッパー19を設けていること、前記蓋5と円筒部16との間に、蓋5の閉じ動作に連動して前記ストッパー19を径方向外方へ弹性変形させて前記ハブ15の凹部14の内面に押圧係合させるストッパー操作機構20を備えていることを特徴とする。

【0006】上記ストッパー19は円筒部16の円周壁16aに設けた切欠部17内に弹性アーム19aを片持ち状に設け、この弹性アーム19aの先端に押圧突起19bを有する。ストッパー操作機構20は円筒部16内をこの中心軸21まわりに回転自在な回動部材22と、蓋5の開閉動作に連動して回動部材22を正逆方向に回転させるリンク機構23とからなり、回動部材22が蓋5の閉じ動作に連動して回転するに伴い前記押圧突起19bに当接し、この当接作用により押圧突起19bが円筒部16の径方向外方へ突出してハブ15の凹部14の内面に押圧係合するようにしてある。

【0007】

【作用】蓋5を閉じると、これに連動してストッパー操作機構20がストッパー19を径方向外方へ弹性変形させてハブ15の凹部14の内面に押圧係合させるため、ディスク2が本体ケース1内でがたつきのを防止できる。

【0008】

【発明の実施の形態】図1および図2においてディスクカートリッジは、薄型四角形状の本体ケース1の内部に、映像・音声・情報等の信号が記録される光磁気ディスク等のディスク2を回転自在に収容する。本体ケース1はプラスチック製の上ケース1aと下ケース1bとを突き合わせて一体的に結合してなり、上ケース1aおよび下ケース1bの前側に相当する一側面3（記録及び／再生装置への挿入側端）にヘッド挿入用の開口部4を設ける。この開口部4は、記録及び／又は再生装置側のヘッドが挿入し易いように前側面3の左右方向の略全長にわたって設け、この開口部4を左右にスライド開閉する蓋5で塞ぐことで不使用時における塵埃侵入防止を図つ

ている。

【0009】図3および図4に示すように、開口部4の上下には蓋5の上下端がスライド自在にはめ込まれる溝6を設ける。上下ケース1a・1bの一側面3に隣接する他側面9の上下にも溝7を前記溝6と連続するように形成する。一側面3と他側面9とが交わるコーナにおける溝6・7はできる限り大きい曲率半径のアールに形成する。一方、蓋5は撓み変形自在な材料、例えば薄いポリプロピレンなどの合成樹脂板、またはステンレスなどの金属薄板で構成して、開閉時に一側面3から他側面9にかけて溝6・7に沿って回り込み易くする。さらに、蓋5の他側面9に回り込む側の先端部5aはアール形状に形成することで、溝6・7の曲がり角をも円滑にスライドできて他側面9に回り込み易くする。

【0010】図3に示すように、蓋5はこれの基端側の上部に開閉ノブ10を一体的に結合し、この開閉ノブ10は上ケース1aの上壁11の外面の前側端に落ち込み状に設けた段部12上に配置し、開閉ノブ10と蓋5との結合部を段部12に前記溝6の上方に対応するよう左右方向に設けたスリット13内にはめ込んで、開閉ノブ10をスリット13に沿って左右方向に移動させることで蓋5が開閉する。開閉ノブ10は四凸状の係合部10aを有し、このディスクカートリッジを記録及び／又は再生装置に装填したときに該装置側の蓋開閉操作部材が開閉ノブ10の係合部10aに係合し、この係合作用で蓋5が自動的に開閉操作される。蓋5の閉じ状態は図2に実線で示し、開き状態を二点鎖線で示す。

【0011】このディスクカートリッジは不使用時にディスク2がラジアル方向に遊動してがたつくことのないようにロック手段を備える。このロック手段について、ディスク2はこれの中心部に凹部14を有する断面皿形のハブ15を一体的に結合し、上ケース1aの上壁11の内面中心部から円筒部16を下向きに突設し、この円筒部16の下端部を前記ハブ15の凹部14内に臨ませる。円筒部16の円周壁16aには一対の切欠部17を対称に設け、各切欠部17内にストッパー19を該円筒部16の径方向に弹性変形自在に設ける。ストッパー19は切欠部17内に片持ち状に設けた弹性アーム19aと、この弹性アーム19aの先端に設けた押圧突起19bとからなる。

【0012】蓋5と円筒部16との間には、蓋5の閉じ動作に連動してストッパー19を操作するストッパー操作機構20を設ける。ストッパー操作機構20は円筒部16内をこの中心軸21まわりに回転自在な回動部材22と、蓋5の開閉動作に連動して回動部材22を正逆方向に回転させるリンク機構23を備える。リンク機構23は回動部材22に一端が一体的に結合された揺動リンク24と、この揺動リンク24の他端と蓋5側とを連結する中継リンク25とからなる。揺動リンク24は、本体ケース1内において、円筒部16の円周壁16aの切

欠部17より上方に設けた透孔26に通されて開口部4の方向へ延設されて、本体ケース1の平面と平行な面上で中心軸21まわりに回動部材22ごと揺動自在とする。中継リンク25は開閉ノブ10と蓋5との結合部から本体ケース1の内方へ水平に突設され、この突出端にピン27を立設し、このピン27を揺動リンク24の端部に設けた長孔29に係合する。

【0013】しかるべきは、蓋5が図2に二点鎖線で示すごとく開いた使用状態では、円筒部16内で回動部材22が弹性アーム19aの押圧突起19bから離れた位置にあり、ディスク2は円筒部16まわりに回転自在である。そして蓋5が図2に実線で示すごとく閉じると、この蓋5の閉じ動作に連動して回動部材22がリンク機構23を介して円筒部16内を一方向に回転して押圧突起19bに当接し、この当接作用により押圧突起19bが円筒部16の径方向外方へ突出してハブ15の凹部14の内面に押圧係合する。したがって、ディスク2がラジアル方向にがたつくのを規制することができ、そのがたつきに伴い発生するハブ15と本体ケース1内面とのこすれによる粉落ちを防止できる。

【0014】上記実施例では、開口部4を本体ケース1の前側面3に設けてあるが、その後側面または左右の一側面9に設けることもできる。また円筒部16にストッパー19を対称に一対設けてあるが、そのストッパー19は単一に設けることもできる。さらに、リンク機構23は上記した揺動リンク24と中継リンク25を組み合わせたものに限られるものではない。

【0015】

【発明の効果】本発明によれば、ディスク2のハブ15の凹部14内に嵌合する円筒部16にストッパー19を設け、このストッパー19が蓋5の閉じ動作に連動してハブ15の内面に押圧係合するものとした。したがって、蓋5を閉じる不使用時には振動などによりディスク2が本体ケース1内でがたつくのを規制でき、ハブ15が本体ケース1の内面にこすれて粉落ちを発生するのを防止できる。ストッパー19によるディスク2のがたつき防止は蓋5の閉じ動作に連動して行えるため、取扱上有利である。

【図面の簡単な説明】

40 【図1】ディスクカートリッジの外観斜視図である。
 【図2】ディスクカートリッジの内部平面図である。
 【図3】ディスクカートリッジの断面図である。
 【図4】ディスクカートリッジの分解斜視図である。

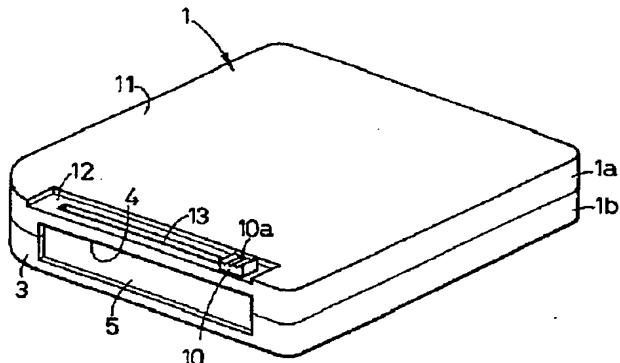
【符号の説明】

- 1 本体ケース
- 2 ディスク
- 3 前側面
- 4 開口部
- 5 蓋

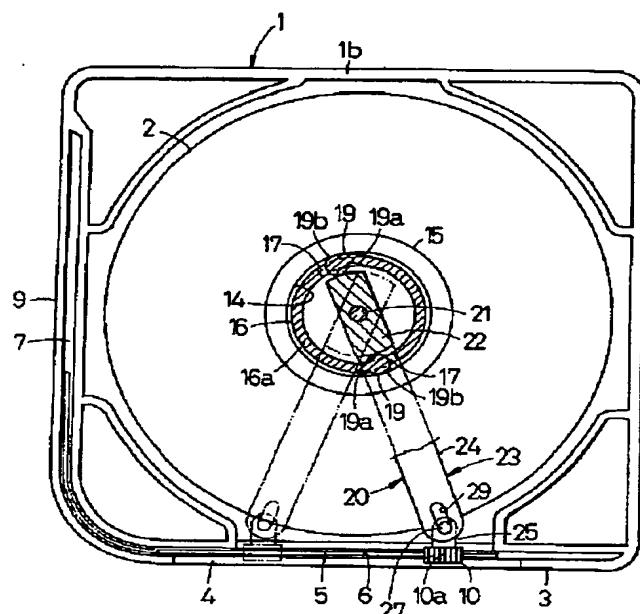
1 5 ハブ
1 6 円筒部
1 6 a 円周壁
1 7 切欠部
1 9 ストップバー
1 9 a 弾性アーム

1 9 b 押圧突起
2 0 ストップバー操作機構
2 1 中心軸
2 2 回動部材
2 3 リンク機構

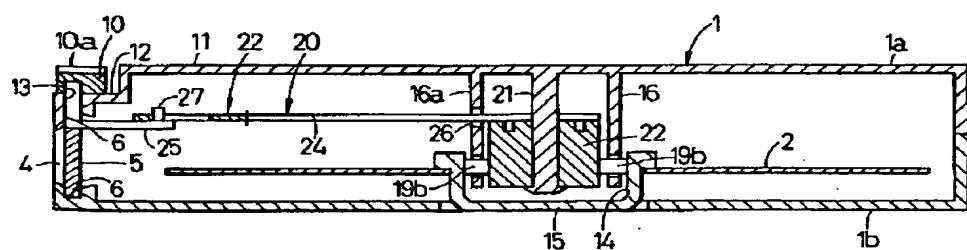
【図 1】



【図 2】



【図 3】



【図 4】

